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EXAMINER

CONTINO, PAUL F

ART UNIT

PAPER NUMBER

2114

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/072,140

Applicant(s)

LAUTERBACH ET AL.

Examiner

Paul Contino

Art Unit

2114

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 38 and 44 is/are allowed.
- 6) ☒ Claim(s) 1-37, 39-43 and 45-58 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims 1-51 have been considered but are moot in view of the new grounds of rejection.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 4-5, 7-8, 10, 16-20, 24-26, 28-29, 31, and 33-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Aguilar et al. (U.S. Patent No. 6,785,807) in view of Eckardt et al. (U.S. Patent No. 6,807,643).

As in claim 1, Aguilar et al. teaches of a storage server system having a processor (*Fig. 1 #210*) and a memory, the storage server system (*Fig. 1; column 3 lines 48-52*) comprising:

a storage operating system adapted to be executed by the processor (*column 4 lines 38-57*);

a removable nonvolatile memory device coupled to a system bus, the removable nonvolatile memory device containing diagnostics code for the system (*Fig. 1 #262,218; column 4 lines 60-67 and column 5 lines 2-5; removable nonvolatile memory device 262 is interpreted as being coupled to the system bus 212 via core logic chipset 218*); and

a set of boot instructions resident in the storage server system including instructions for executing a normal boot routine upon a power-on of the system (*column 4 lines 40-42*), and including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine (*column 5 lines 47-60, where the execution of an initial startup instruction with an address mapped to the flash card 262 is interpreted as an execution the processor to execute a diagnostics boot routine*).

However, Aguilar et al. fails to teach of a command generated upon failure of the normal boot routine. Eckardt et al. teaches of a command generated by a storage system upon a failure of the normal boot routine (*Fig. 2; column 2 lines 20-29 and line 53 through column 3 line 27, where the setting of a flag and/or the requesting by a user using a hot key are interpreted as commands; further use of an external diagnostics boot in column 9 lines 35-54*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the command generation as taught by Eckardt et al. in the invention of Aguilar et al. This would have been obvious because the invention of Eckardt allows for

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continued operation of a storage system in the presence of an initial boot failure in order to increase the overall fault tolerance of such a storage system.

As in claim 2, Aguilar teaches the removable nonvolatile memory device is a compact flash, the compact flash being divided into a plurality of partitions with the diagnostics code residing in at least one of the partitions (*Fig. 1 #264,268; column 4 lines 58-67 and column 6 lines 29-30, where program 264 and program 268 are interpreted as residing in respective partitions*).

As in claim 4, Aguilar et al. teaches a[n] input/output device coupled to the system bus, and [in] which input/output device is identifiable by the processor (*Fig. 1 #260; column 4 lines 59-61; the flash connector 260 is inherently identifiable by the processor in order to transfer data from the flash card 262 to the RAM 216; the flash connector 260 is interpreted as being connected to the system bus 220 via core logic chipset 218*); and

a second bus coupled between the input/output device and the compact flash (*Fig. 1 #266*) in such a manner that when the processor identifies the input/output device, the compact flash is, in turn, initialized and the diagnostics code is executed upon a command to run a diagnostics boot routine (*column 4 lines 58-67 and column 5 lines 2-5 and 47-58*).

As in claim 5, Aguilar et al. teaches a storage adapter coupled to the system bus (*column 3 line 51 and column 4 lines 12-21, where the server is interpreted as a storage adapter connected to the system bus 220 via network interface 250*); and

at least one storage disk coupled to the storage adapter and containing files served by the operating system (*column 4 lines 40-57, where the applications are interpreted as files being served by the OS*).

As in claim 7, Aguilar et al. teaches a motherboard upon which the processor, the memory, and the set of boot instructions reside (*column 4 lines 2-5*).

As in claim 8, Aguilar et al. teaches the removable nonvolatile memory device containing the diagnostics code is resident external to the motherboard, and the diagnostics code on the removable nonvolatile memory device is adapted to be upgraded or amended free of taking the system out of service (*Fig. 1 #262, compact flash card external to the motherboard; system 200 is interpreted as not being dependent upon the compact flash card in order to operate, column 3 line 44 through column 4 line 57*).

As in claim 10, Aguilar et al. teaches said boot instructions reside in firmware (*column 4 lines 39-40, where the startup program boot instructions 214 reside in ROM firmware 214*).

As in claim 16, Aguilar et al. teaches of a storage system having a processor (*Fig. 1 #210*) and a memory, the storage system comprising:

means for storing a set of diagnostics instructions comprising diagnostics code, in a removable nonvolatile memory device coupled to a system bus, the removable nonvolatile memory device being identifiable to the system (*Fig. 1 #262,218; column 4 lines 60-67 and*

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*column 5 lines 2-5; removable nonvolatile memory device 262 is interpreted as being coupled to the system bus 212 via core logic chipset 218); and*

means for executing the diagnostics code in response to a diagnostics boot command received by system firmware (*column 5 lines 2-5 and lines 50-58*).

However, Aguilar et al. fails to teach of a command generated upon failure of the normal boot routine. Eckardt et al. teaches of a command generated by a storage system upon a failure of the normal boot routine (*Fig. 2; column 2 lines 20-29 and line 53 through column 3 line 27, where the setting of a flag and/or the requesting by a user using a hot key are interpreted as commands; further use of an external diagnostics boot in column 9 lines 35-54*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the command generation as taught by Eckardt et al. in the invention of Aguilar et al. This would have been obvious because the invention of Eckardt allows for continued operation of a storage system in the presence of an initial boot failure in order to increase the overall fault tolerance of such a storage system.

As in claim 17, Aguilar et al. teaches means for coupling the removable nonvolatile memory device to the processor in such a manner that the diagnostics code may be upgraded without taking the storage system out of normal service (*system 200 is interpreted as not being dependent upon the compact flash card in order to operate, column 3 line 44 through column 4 line 57*).

As in claim 18, Aguilar et al. teaches a means for upgrading the diagnostics code by interfacing with the storage system through an associated input/output interface (*column 5 lines 7-9, where the means for upgrading is available*).

As in claim 19, Aguilar et al. teaches [a] computer-readable medium operating on a computer in a network that includes one or more storage systems sharing volumes, the computer-readable medium including program instructions for performing the steps of:

- initiating a power-on self test when the computer is powered-on (*column 4 lines 40-42*);
- identifying devices present in the computer (*column 5 lines 15-25*);
- in response to a successful power-on self test, commencing a normal boot routine (*column 5 lines 38-40*);
- recognizing a command for a diagnostics boot (*column 5 lines 54-58*);
- in response to the diagnostics boot command, probing devices to locate a removable nonvolatile memory device containing diagnostic boot instructions (*column 5 lines 54-58*); and
- interrupting the normal boot routine and executing the diagnostics code for a diagnostics boot for the computer (*column 5 lines 50-60*).

However, Aguilar et al. fails to teach of a command generated upon failure of the normal boot routine. Eckardt et al. teaches of a command generated by a storage system upon a failure of the normal boot routine (*Fig. 2; column 2 lines 20-29 and line 53 through column 3 line 27, where the setting of a flag and/or the requesting by a user using a hot key are interpreted as commands; further use of an external diagnostics boot in column 9 lines 35-54*).



It would have been obvious to a person skilled in the art at the time the invention was made to have included the command generation as taught by Eckardt et al. in the invention of Aguilar et al. This would have been obvious because the invention of Eckardt allows for continued operation of a storage system in the presence of an initial boot failure in order to increase the overall fault tolerance of such a storage system.

As in claim 20, Aguilar et al. teaches further instruction to identify a compact flash as the removable nonvolatile memory device in which diagnostics code for the computer is stored (*column 4 line 58 through column 5 line 5, and column 5 lines 50-60*).

As in claim 24, Aguilar et al. teaches a diagnostic system for use with a storage system comprising:

a removable nonvolatile memory device interconnected with the storage system, wherein the removable nonvolatile memory device contain[s] boot diagnostic code that is loadable into the storage system as an alternative to a normal boot routine (*column 4 line 58 through column 5 line 5*).

However, Aguilar et al. fails to teach of a command generated upon failure of the normal boot routine. Eckardt et al. teaches of a command generated by a storage system upon a failure of the normal boot routine (*Fig. 2; column 2 lines 20-29 and line 53 through column 3 line 27, where the setting of a flag and/or the requesting by a user using a hot key are interpreted as commands; further use of an external diagnostics boot in column 9 lines 35-54*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the command generation as taught by Eckardt et al. in the invention of Aguilar et al. This would have been obvious because the invention of Eckardt allows for continued operation of a storage system in the presence of an initial boot failure in order to increase the overall fault tolerance of such a storage system.

As in claim 25, Aguilar et al. teaches the removable nonvolatile memory device further comprises a plurality of partitions (*Fig. 1 #264,268; column 4 lines 58-67 and column 6 lines 29-30, where program 264 and program 268 are interpreted as residing in respective partitions*).

As in claim 26, Aguilar et al. teaches the boot diagnostic code is contained within a first partition of the plurality of partitions (*Fig. 1 #268; column 6 lines 28-40*).

As in claim 28, Aguilar et al. teaches the removable nonvolatile memory device is a PC card (*column 4 lines 58-67, which is interpreted as a type of PC card*).

As in claim 29, Aguilar et al. teaches the removable nonvolatile memory device is a compact flash (*column 4 line 61*).

As in claim 31, Aguilar et al. teaches a server system having a processor and a memory, the server system comprising:

a storage operating system adapted to be executed by the processor (*column 4 lines 38-57*);

a removable nonvolatile memory device coupled to the system bus, the removable nonvolatile memory device containing diagnostics code for the system (*Fig. 1 #262,218; column 4 lines 60-67 and column 5 lines 2-5; removable nonvolatile memory device 262 is interpreted as being coupled to the system bus 212 via core logic chipset 218*), the removable nonvolatile memory device also divided into a plurality of partitions with the diagnostics code residing in at least one of the partitions (*Fig. 1 #264,268; column 4 lines 58-67 and column 6 lines 29-30, where program 264 and program 268 are interpreted as residing in respective partitions*); and

a set of boot instructions resident in the filer server system including instructions for executing a normal boot routine upon a power-on of the system (*column 4 lines 40-42*), and including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine (*column 5 lines 47-60, where the execution of an initial startup instruction with an address mapped to the flash card 262 is interpreted as an execution the processor to execute a diagnostics boot routine*).

However, Aguilar et al. fails to teach of a command generated upon failure of the normal boot routine. Eckardt et al. teaches of a command generated by a storage system upon a failure of the normal boot routine (*Fig. 2; column 2 lines 20-29 and line 53 through column 3 line 27, where the setting of a flag and/or the requesting by a user using a hot key are interpreted as commands; further use of an external diagnostics boot in column 9 lines 35-54*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the command generation as taught by Eckardt et al. in the invention of Aguilar et al. This would have been obvious because the invention of Eckardt allows for continued operation of a storage system in the presence of an initial boot failure in order to increase the overall fault tolerance of such a storage system.

As in claim 33, Aguilar et al. teaches a separate storage medium, the separate storage medium storing a boot routine (*Fig. 1 #264,268; column 6 lines 28-30, where the separate storage medium is interpreted as partition 268*).

As in claim 34, Aguilar et al. teaches the separate storage medium is a partition on the removable nonvolatile storage device (*Fig. 1 #264,268; column 6 lines 28-30, where the separate storage medium is interpreted as partition 268*).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 3, 9, 21-23, 27, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aguilar et al. in view Eckardt, further in view of Orr (U.S. Patent No. 6,189,114).

As in claim 3, the combined invention of Aguilar et al. and Eckardt teaches partitions of a compact flash. However, the combined invention of Aguilar et al. and Eckardt fails to teach of partitions designated as a maintenance log. Orr teaches of partitions in a flash memory designated as a maintenance log into which test results and data are stored (*test results: column 7 lines 25-27; data: column 5 line 34*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the maintenance log as disclosed by Orr in the combined invention of Aguilar et al. and Eckardt. This would have been obvious because Aguilar et al. teaches interchanging ROM with compact flash (*column 4 lines 63-65 and column 7 lines 2-5*) in a similar file server boot environment.

As in claim 9, the combined invention of Aguilar et al. and Eckardt teaches of code relating to the diagnostics of hardware devices (*column 5 line 60*). However, the combined invention of Aguilar et al. and Eckardt fails to disclose specific hardware devices. Orr teaches said diagnostic code includes code relating to the diagnostics of hardware devices including the processor, the memory, the buses, the adapters, the disks, a compact flash and interfaces thereof (*Fig 2, column 5 lines 35-43*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the hardware diagnostics as disclosed by Orr in the combined invention of Aguilar et al. and Eckardt. This would have been obvious because Aguilar et al. teaches interchanging ROM with compact flash (*column 4 lines 63-65 and column 7 lines 2-5*) in a similar file server boot environment.

As in claim 21, the combined invention of Aguilar et al. and Eckardt teaches of diagnostic tests. However, the combined invention of Aguilar et al. and Eckardt fails to teach of saving diagnostic results in the compact flash. Orr teaches of saving diagnostic test results and other data in a predetermined address location in the nonvolatile memory associated with the computer (*test results: column 7 lines 25-27; data: column 5 line 34*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the saving as disclosed by Orr in the combined invention of Aguilar et al. and Eckardt. This would have been obvious because Aguilar et al. teaches interchanging ROM with compact flash (*column 4 lines 63-65 and column 7 lines 2-5*) in a similar file server boot environment.

As in claim 22, Orr teaches the diagnostics boot command is initiated by a human maintenance operator (*Orr: column 5 lines 59-62; Aguilar et al.: column 7 lines 5-9 and 57-59*).

As in claim 23, Orr teaches the diagnostics boot command is initiated as an instruction in the computer readable medium upon the occurrence of a predetermined event (*column 5 line 56*

*through column 6 line 5, where the predetermined event may be interpreted as the flag defined in the CMOS).*

As in claim 27, the combined invention of Aguilar et al. and Eckardt teaches partitions of a compact flash. However, the combined invention of Aguilar et al. and Eckardt fails to teach of partitions designated as a diagnostic log. Orr teaches of partitions in a removable nonvolatile memory device comprising a second partition, the second partition storing a diagnostic log (*test results: column 7 lines 25-27; data: column 5 line 34*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the diagnostic log as disclosed by Orr in the combined invention of Aguilar et al. and Eckardt. This would have been obvious because Aguilar et al. teaches interchanging ROM with compact flash (*column 4 lines 63-65 and column 7 lines 2-5*) in a similar file server boot environment.

As in claim 30, the combined invention of Aguilar et al. and Eckardt teaches of a firmware boot routine. However, the combined invention of Aguilar et al. and Eckardt fails to teach of the firmware boot routine selecting between execution of a normal or diagnostic boot routine. Orr teaches a firmware boot routine (*Fig. 2, column 5 lines 17-19*), the firmware boot routine having a process for selecting between execution of either a normal boot routing or a diagnostic boot routine (*column 5 line 56 through column 6 line 5*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the diagnostic log as disclosed by Orr in the combined invention of

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Aguilar et al. and Eckardt. This would have been obvious because Aguilar et al. teaches interchanging ROM with compact flash (*column 4 lines 63-65 and column 7 lines 2-5*) in a similar file server boot environment. Further, Aguilar et al. teaches both a normal boot routine and a diagnostic boot routine.

As in claim 32, the combined invention of Aguilar et al. and Eckardt teaches partitions of a compact flash. However, the combined invention of Aguilar et al. and Eckardt fails to teach of partitions designated as a maintenance log. Orr teaches of partitions in a flash memory designated as a maintenance log into which test results and data are stored (*test results: column 7 lines 25-27; data: column 5 line 34*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the maintenance log as disclosed by Orr in the combined invention of Aguilar et al. and Eckardt. This would have been obvious because Aguilar et al. teaches interchanging ROM with compact flash (*column 4 lines 63-65 and column 7 lines 2-5*) in a similar file server boot environment.

\* \* \*

4. Claims 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Orr in view of Aguilar et al., further in view of Hitz et al. (U.S. Patent No. 5,963,962).

As in claim 6, Orr teaches a server system (*column 4 lines 32-34*) comprising:



a storage operating system adapted to be executed by the processor (*column 5 lines 5-9*);

a nonvolatile memory device coupled to the system bus, the removable nonvolatile memory device containing diagnostics code for the system (*column 5 lines 14-15 and 21-23*);

a set of boot instructions resident in the filer server system including instructions for executing a normal boot routine upon a power-on of the system (*Fig. 2, column 5 lines 17-19*), and including instructions enabling the processor to identify the nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine (*column 5 lines 56-59*);

a storage adapter coupled to the system bus (*column 5 lines 2-4*);

at least one storage disk coupled to the storage adapter and containing files served by the operating system (*column 5 lines 2-4*); and

a plurality of disks coupled to the storage adapter (*column 5 lines 2-4*).

However, Orr fails to disclose a removable nonvolatile memory, a command generated upon failure of the normal boot routine, or a write anywhere file layout system. Aguilar et al. teaches a removable nonvolatile memory (*column 4 line 58 through column 5 line 5*). Eckardt et al. teaches of a command generated by a storage system upon a failure of the normal boot routine (*Fig. 2; column 2 lines 20-29 and line 53 through column 3 line 27, where the setting of a flag and/or the requesting by a user using a hot key are interpreted as commands; further use of an external diagnostics boot in column 9 lines 35-54*). Hitz et al. teaches a write anywhere file layout system (*column 5 lines 35-47*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the removable nonvolatile memory as taught by Aguilar et al. in the

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invention of Orr. This would have been obvious because Aguilar et al. teaches interchanging ROM with compact flash (*column 4 lines 63-65 and column 7 lines 2-5*) in a similar file server boot environment as that taught by Orr.

It would have been obvious to a person skilled in the art at the time the invention was made to have included the command generation as taught by Eckardt et al. in the combined invention of Orr and Aguilar et al. This would have been obvious because the invention of Eckardt allows for continued operation of a storage system in the presence of an initial boot failure in order to increase the overall fault tolerance of such a storage system.

It would have been obvious to a person skilled in the art at the time the invention was made to have included a write anywhere file layout system as disclosed by Hitz et al. in the combined invention of Orr, Aguilar et al., and Eckardt et al. This would have been obvious because the write anywhere file layout system as disclosed by Hitz et al. conserves system storage resources and preserves data integrity (*column 4 lines 20-27*). A write anywhere file layout storage system as disclosed by Hitz et al. adds a layer of fault tolerance to a system, similar to the inclusion of a RAID storage system as disclosed by the combined invention of Orr, Aguilar et al., and Eckardt et al. (*Orr: column 5 lines 2-4*). Because the combined invention of Orr, Aguilar et al., and Eckardt et al. does not limit his storage system to a RAID storage system, and the combined invention of Orr, Aguilar et al., and Eckardt et al.'s functionality is not dependent on the particular type of storage system, it would have been obvious to have included a write anywhere file layout storage system in place of a RAID storage system.

\* \* \*

5. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aguilar et al. in view of Piau et al. (U.S. PGPub 2004/0049627), further in view of Eckardt et al.

As in claim 11, Aguilar et al. teaches of a method of performing diagnostics in a storage server system, the storage server system having a processor and a memory, the method comprising the steps of (*Fig. 1; columns 3 and 4*):

(A) providing a removable nonvolatile memory device interfaced with the motherboard, the removable nonvolatile memory device being identifiable to the processor (*Fig. 1 #260; column 4 lines 58-67*);

(B) the removable nonvolatile memory device having separate memory partitions (*Fig. 1 #264,268; column 4 lines 58-67 and column 6 lines 29-30, where program 264 and program 268 are interpreted as residing in respective partitions*);

(C) storing a set of diagnostics instructions, being a diagnostics code, in one of the partitions of the removable nonvolatile memory device (*Fig. 1 #264,268; column 4 lines 58-67 and column 6 lines 29-30, where program 264 and program 268 are interpreted as residing in respective partitions*); and

(D) programming a system firmware to recognize a command for a diagnostics boot such that in response to the diagnostics boot command, the firmware loads the diagnostics code residing in the removable nonvolatile memory device into the memory to execute a diagnostic boot routine instead of a normal boot routine (*column 5 lines 47-58, where the execution of an*

*initial startup instruction with an address mapped to the flash card 262 is interpreted as an execution the processor to execute a diagnostics boot routine).*

However, Aguilar et al. fails to teach of dividing the removable nonvolatile memory device into separate memory partitions or recognizing a user implemented command entered during the normal boot routine. Piau et al. teaches of dividing the removable nonvolatile memory device into separate memory partitions (*paragraph [0005] lines 1-5, paragraph [0022], and paragraph [0031]*). Eckardt et al. teaches a user implements command entered via a command line interface during the normal boot routine in order to enter a diagnostics mode (*column 3 lines 4-27 and column 5 lines 12-29*).

It would have been obvious for a person skilled in the art at the time the invention was made to have included the partitioning of memory as taught by Piau et al. in the invention of Aguilar et al. This would have been obvious because the invention of Piau et al. offers a time efficient compact flash card interface (*paragraphs [0007] and [0009]*) capable of storing data to be downloaded to a host system similar to the environment as taught in Aguilar et al.

It would have been obvious for a person skilled in the art at the time the invention was made to have included the user implemented command as taught by Eckardt et al. in the combined invention of Aguilar et al. and Piau et al. This would have been obvious because the invention of Eckardt allows for continued operation of a storage system in the presence of an initial boot failure in order to increase the overall fault tolerance of such a storage system.

As in claim 12, Piau et al. teaches of maintaining, in a separate partition of the removable nonvolatile memory device, a maintenance log into which diagnostic test results data and data

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about the storage system are stored (*paragraph [0023], where the drive information table is interpreted as a maintenance log*).

As in claim 13, Aguilar teaches of a compact flash (*column 4 lines 58-67*).

As in claim 14, Aguilar teaches of a compact flash card (*column 4 lines 58-67, which is interpreted as a type of PC card*).

As in claim 15, Aguilar et al. teaches of a method to keep the system operational during an upgrade (*system 200 is interpreted as not being dependent upon the compact flash card in order to operate, column 3 line 44 through column 4 line 57*).

\* \* \*

6. Claims 35, 40, 41, and 46-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aguilar et al. in view of Beyda et al. (U.S. Patent No. 6,012,130), further in view of Eckardt et al.

As in claims 35, 41, and 47-50, Aguilar et al. teaches of a computer having a processor and a main memory (*Fig. 1*), the computer comprising:

a non-removable non-volatile memory device containing a boot mechanism firmware, the boot mechanism firmware configured to provide a normal boot routine and select a first drive to

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boot from (*column 4 lines 39-47, where ROM 214 is interpreted as a non-removable non-volatile memory device and the remote server is interpreted as inherently having a drive containing an OS*);

a user interface configured to allow a user to enter a command to run a diagnostic routine (*column 7 lines 2-9*); and

a removable non-volatile memory device storing the diagnostic routine (*column 4 lines 59-67 and column 5 lines 2-5*), at least a portion of the removable non-volatile memory device configured as a second drive, the boot mechanism firmware configured to, in response to a command, select the second drive to boot from and load the diagnostics routine into main memory (*Fig. 1 #262; column 5 lines 2-5 and lines 50-57*).

However, Alguilar et al. fails to teach of logical drives or a command line interface. Beyda et al. teaches of logical drives (*Fig. 2 #s 112,116; column 4 lines 36-52, column 5 lines 40-42, column 6 lines 47-59, and column 7 lines 17-18, where it is interpreted that a flash card drive would be designated as a logical drive in a similar fashion as the CD ROM drive*). Eckardt et al. teaches of a command entered via a command line interface (*column 3 lines 4-27 and column 5 lines 12-29; further for loading diagnostics from a second drive in column 9 lines 42-53*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the logical drive designation as taught by Beyda et al. in the invention of Alguilar et al. This would have been obvious because the invention of Beyda et al. minimizes time, errors, and necessary user knowledge (*column 9 lines 60-65*). Further, it is well-known in the art to reference media storage drives using a logical designation.

It would have been obvious for a person skilled in the art at the time the invention was made to have included the user implemented command as taught by Eckardt et al. in the combined invention of Aguilar et al. and Beyda et al. This would have been obvious because the invention of Eckardt allows for continued operation of a storage system in the presence of an initial boot failure in order to increase the overall fault tolerance of such a storage system.

As in claims 40 and 46, Alguilar et al. teaches the removable non-volatile memory device is a compact flash (*column 4 line 60*).

\* \* \*

7. Claims 36, 39, 42, 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aguilar et al. in view of Beyda et al., further in view of Eckardt et al., further in view of Piau et al.

As in claims 36 and 42, the combined invention of Alguilar et al., Beyda et al., and Maupin et al. teaches of the limitations of claims 35 and 41, respectively. However, the combined invention of Alguilar et al., Beyda et al., and Eckardt et al. fails to teach of memory partitions. Piau et al. teaches of a removable nonvolatile memory device having a memory partitions (*paragraph [0005] lines 1-5, paragraph [0022], and paragraph [0031]*).

It would have been obvious for a person skilled in the art at the time the invention was made to have included the partitioning of memory as taught by Piau et al. in the combined invention of Alguilar et al., Beyda et al., and Eckardt et al. This would have been obvious

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because the invention of Piau et al. offers a time efficient compact flash card interface (*paragraphs [0007] and [0009]*) capable of storing data to be downloaded to a host system similar to the environments as taught in the combined invention of Alguilar et al., Beyda et al., and Eckardt et al.

As in claims 39 and 45, the combined invention of Alguilar et al., Beyda et al., and Maupin et al. teaches of the limitations of claims 35 and 41, respectively. However, the combined invention of Alguilar et al., Beyda et al., and Eckardt et al. fails to teach of configuring or modifying contents of the removable non-volatile memory. Piau et al. teaches of configuring/modifying contents of a removable nonvolatile memory (*paragraph [0022]*).

It would have been obvious for a person skilled in the art at the time the invention was made to have included the configuring/modifying of memory as taught by Piau et al. in the combined invention of Alguilar et al., Beyda et al., and Eckardt et al. This would have been obvious because the invention of Piau et al. offers a time efficient compact flash card interface (*paragraphs [0007] and [0009]*) capable of storing data to be downloaded to a host system similar to the environments as taught in the combined invention of Alguilar et al., Beyda et al., and Eckardt et al.

\* \* \*

8. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aguilar et al., in view of Eckardt et al., further in view of Beyda et al.



As in claim 51, the combined invention of Aguilar et al. and Eckardt et al. teaches of boot instructions configured to boot from a drive associated with the removable nonvolatile memory device. However, the combined invention of Aguilar et al. and Eckardt et al. fails to teach of a logical drive. Beyda et al. teaches of a logical drive associated with a removable nonvolatile memory device (*Fig. 2 #s 112,116; column 4 lines 36-52, column 5 lines 40-42, column 6 lines 47-59, and column 7 lines 17-18, where it is interpreted that a flash card drive would be designated as a logical drive in a similar fashion as the CD ROM drive*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the logical drive designation as taught by Beyda et al. in the combined invention of Aguilar et al. and Eckardt et al. This would have been obvious because the invention of Beyda et al. minimizes time, errors, and necessary user knowledge (*column 9 lines 60-65*). Further, it is well-known in the art to reference media storage drives using a logical designation.

\* \* \*

9. Claims 37 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aguilar et al. in view of Beyda et al., further in view of Eckardt et al., further in view of Austen et al. (U.S. Patent No. 6,701,464).

As in claims 37 and 43, the combined invention of Aguilar et al., Beyda et al., and Maupin et al. teaches of the limitations of claims 35 and 41, respectively. However, the

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combined invention of Aguilar et al., Beyda et al., and Eckardt et al. fails to teach of an additional portion allocated to a maintenance log. Austen et al. teaches a non-volatile memory which stores a maintenance log in response to a diagnostic routine (*Fig. 1 #18; column 1 lines 42-43 and column 2 lines 14-15 and 36-37*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the log partition as taught by Austen et al. in the combined invention of Aguilar et al., Beyda et al., and Eckardt et al. This would have been obvious because the invention of Austen et al. increases the overall fault tolerance of a logically partitioned system (*column 1 lines 54-55*).

\* \* \*

10. Claims 52, 54, 56, and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aguilar et al. in view of Beyda et al., further in view of Austen et al.

As in claims 52, 54, 56, and 58, Aguilar et al. teaches of a computer having a processor and a main memory (*Fig. 1*), the computer comprising:

a non-removable non-volatile memory device containing a boot mechanism firmware, the boot mechanism firmware configured to provide a normal boot routine (*column 4 lines 39-47, where ROM 214 is interpreted as a non-removable non-volatile memory device and the remote server is interpreted as inherently having a drive containing an OS*); and

a removable non-volatile memory device partitioned into a first and second partition (*Fig. 1 #s 264 and 268*), the first partition storing the diagnostic routine (*column 5 lines 57-58*), the boot mechanism firmware configured to select the first logical drive to boot from and load the diagnostic routine into memory (*column 5 lines 47-58 and 64-67*).

However, Aguilar et al. fails to teach of logical drives or a maintenance log. Beyda et al. teaches of logical drives (*Fig. 2 #s 112,116; column 4 lines 36-52, column 5 lines 40-42, column 6 lines 47-59, and column 7 lines 17-18, where it is interpreted that a flash card drive would be designated as a logical drive in a similar fashion as the CD ROM drive*). Austen et al. teaches of a non-volatile memory which stores a maintenance log in response to a diagnostic routine (*Fig. 1 #18; column 1 lines 42-43 and column 2 lines 14-15 and 36-37*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the logical drive designation as taught by Beyda et al. in the invention of Aguilar et al. This would have been obvious because the invention of Beyda et al. minimizes time, errors, and necessary user knowledge (*column 9 lines 60-65*). Further, it is well-known in the art to reference media storage drives using a logical designation.

It would have been obvious to a person skilled in the art at the time the invention was made to have included the log partition as taught by Austen et al. in the combined invention of Aguilar et al. and Beyda et al. This would have been obvious because the invention of Austen et al. increases the overall fault tolerance of a logically partitioned system (*column 1 lines 54-55*).

\* \* \*

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11. Claims 53, 55, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aguilar et al. in view of Beyda et al., further in view of Austen et al., further in view of McKaughan et al. (U.S. Patent No. 6,014,744).

As in claims 53, 55, and 57, the combined invention of Aguilar et al., Beyda et al., and Austen et al. teaches the respective base limitations, including selecting a first logical drive upon a command generated by the computer. However, the combined invention of Aguilar et al., Beyda et al., and Austen et al. fails to teach of selection upon failure of a normal boot routine. McKaughan et al. teaches of selecting of a diagnostic boot upon failure of a normal boot routine (*column 1 lines 43-45 and 56-61, column 2 lines 57-61, column 3 lines 3-4, column 4 lines 26-31, and column 5 lines 58-62*).

It would have been obvious to a person skilled in the art at the time the invention was made to have included the failure recognition of a normal boot routine as taught by McKaughan et al. in the combined invention of Aguilar et al., Beyda et al., and Austen et al. This would have been obvious because the invention of McKaughan et al. reduces the amount of time and resources necessary while increasing fault tolerance during boot of a computer system (*column 1 lines 20-25 and 46-54*). \*

#### ***Allowable Subject Matter***

12. Claims 38 and 44 are allowed.

*Conclusion*

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Contino whose telephone number is (571) 272-3657. The examiner can normally be reached on Monday-Friday 9:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571) 272-3644. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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PFC  
8/4/2006

  
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